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point underground, which, reaching the limit, finally gives rise to a sudden disturbance which forms the source of wave motion propagated through the rock and the soil. A very extensive earthquake, such as that of April 18th, may thus be regarded as having removed a considerable unstability existing in this part of the Earth's crust; those regions most violently shaken becoming seismically the safest place for a certain time interval to come. As a matter of fact, there has been no case in which great earthquakes have originated successively at one and the same center.

The small after shocks which will continue to shake the different portions of the western coast for a few years, are not of a dangerous nature. On the contrary, it is absolutely necessary that these small shocks should occur, as the disturbed Earth's crust settles, by means of these shocks, into the original condition of equilibrium; and even in the case of a future earthquake, after a number of years, the intensity of motion would not be so violent, and it will be an easy task to make architectural and engineering works perfectly earthquake proof.

San Francisco, June 9, 1906.

ECLIPSES OF THE SATELLITES OF SATURN, OCCURRING IN THE YEAR 1906.

By Hermann Struve.

The interesting observations of the eclipses of the satellites of *Saturn*, being of the greatest value for deriving the diameters of the planets, for correcting the elements of the orbits and for conclusions as to the dimensions of the satellites, and some physical questions, it is to be hoped, that the favorable opportunities for observing the eclipses during the present and next year will not be lost. The attention of astronomers, who are in possession of powerful instruments is particularly directed to these phenomena. But in the case of the brighter satellites, *Tethys, Dione, Rhea* and *Titan*, instruments of moderate size also could be employed with success.

In the present year the cycle of eclipses extends over all interior satellites from *Mimas* to *Rhea; Titan* and *Hyperion* will be eclipsed only during the next opposition. To facilitate these observations, I have calculated the approximate times and places of the eclipses for every day from June 1st to the end of the year. These data might be useful, especially in the record of the reappearances. Before opposition only the disappearances, after the opposition, only the reappearances are visible from the Earth. The Greenwich mean times are given to a minute and cannot deviate much from the truth. The columns headed s and p, give the geocentric place of the satellite at the time of the eclipse, i.e., the distance of the satellite from the limb of the planet and the position angle, counted from the north point of the minor axis of the disc. As may be seen, the reappearances happen in the present year in general at greater distances from the limb, than the disappearances, and are therefore easier to observe. But it would be of special interest to have the observations distributed on both sides of the planet. The duration of the appearances may be in central eclipses in the case of *Rhea,* several minutes, in the case of *Tethys* and *Dione,* about one minute, in the case of *Mimas* and *Enceladus* only a few seconds. Of course the beginning and ending of the appearance, the seeing and other particulars must be noted by the observers.

At the end of the following tables are given the approximate Greenwich times, when the shadows of the satellites *Tethys, Dione, Rhea* cross the minor axis of the disc, and also their distance from the center of the disc at the time of conjunction. It seems to me doubtful, whether the shadows of *Saturn's* satellites, excepting the shadow of *Titan,* can be seen on the disc, my own search for them with the thirty-inch Pulwoka refractor in the years 1891-92, having been without success. By other observers the shadows were reported to be discernible and it would be of interest to decide the question at this time.

Similar tables were inserted by me in the *Monthly Notices,* Vol. LXIV, for the eclipses of the three innermost satellites in the two foregoing years. Only a few observations have come, hitherto, to my knowledge. But it is to be expected, that the more favorable conditions in the present year, and next year, will procure more numerous observations, and I beg the observers to send them to the Königliche Sternwarte, Berlin, where they will be duly collected and discussed, and will also serve in the preparation of the tables for next year.

Royal Observatory, Berlin, March, 1906.

ECLIPSES OF THE SATELLITES OF SATURN 1906.

DISAPPEARANCE BEFORE OPPOSITION.

s. p. denote the geocentric place of the satellite at the time of its disappearance, i. e., the distance from the limb of the planet and the position angle, counted from the north point of the minor axis to the West.

1906		Gr. M.T.		s. p. (West)	
June 1	Mi	10h	42m	2.0″	87°
	En	15	49	2.2	81
	Di	22	33	2.6	74
2	Mi	9	19	2.0	87
	Te	14	0	2.3	76
3	En	0	42	2.3	81
	Mi	7	56	2.0	87
4	Mi	6	33	2.0	87
	En	9	35	2.3	81
	Te	11	19	2.3	76
	Di	16	14	2.6	74
5	Mi	5	10	2.0	87
	En	18	28	2.3	81
6	Mi	3	47	2.0	87
	Te	8	37	2.4	76
7	Mi	2	24	2.0	87
	En	3	21	2.3	81
	Di	9	55	2.7	75
8	Mi	1	1	2.0	87
	Te	5	56	2.4	76
	En	12	14	2.3	81
	Mi	23	38	2.0	87
9	En	21	7	2.3	81
	Mi	22	15	2.0	87
10	Te	3	15	2.4	76
	Di	3	36	2.7	75
	Mi	20	52	2.0	87
11	En	6	0	2.3	81
	Mi	19	29	2.0	87
12	Te	0	33	2.4	76
	En	14	53	2.4	81
	Mi	18	6	2.0	87
	Di	21	18	2.8	75
13	Mi	16	44	2.0	87
	Te	21	52	2.5	76
	En	23	46	2.4	81
14	Mi	15	21	2.0	87
	Rh	16	11	0.3	62
15	En	8	39	2.4	81
	Mi	13	58	2.0	87
	Di	14	59	2.8	75
	Te	19	10	2.5	76
16	Mi	12	35	2.0	87
	En	17	32	2.4	81
17	Mi	11	12	2.0	87
	Te	16	28	2.5	76
18	En	2	25	2.4	81
	Di	8	40	2.9	75
	Mi	9	49	2.1	87
19	Rh	4	26	0.8	64
	Mi	8	26	2.1	87
	En	11	18	2.4	81
	Te	13	47	2.5	76
20	Mi	7	3	2.1	87
	En	20	12	2.4	81
21	Di	2	21	2.9	75
	Mi	5	41	2.1	87
	Te	11	5	2.5	76
22	Mi	4	17	2.1	87
	En	5	5	2.4	81
23	Mi	2	54	2.1	87
	Te	8	24	2.5	76
	En	13	58	2.4	81
	Rh	16	46	1.1	65
	Di	20	2	2.9	75
24	Mi	1	31	2.1	87
	En	22	51	2.4	81
June 25	Mi	0h	8m	2.1″	87°
	Te	5	43	2.5	76
	Mi	22	45	2.1	87
26	En	7	44	2.4	81
	Di	13	44	2.9	75
	Mi	21	22	2.0	86
27	Te	3	1	2.4	76
	En	16	37	2.3	81
	Mi	19	59	2.0	86
28	Rh	5	8	1.3	65
	Mi	18	37	2.0	86
29	Te	0	19	2.4	76
	En	1	30	2.3	81
	Di	7	25	2.8	75
	Mi	17	14	2.0	86
30	En	10	24	2.3	81
	Mi	15	51	2.0	86
	Te	21	38	2.4	76
July 1	Mi	14	28	2.0	86
	En	19	17	2.3	81
2	Di	1	6	2.8	75
	Mi	13	5	1.9	86
	Rh	17	31	1.5	65
	Te	18	57	2.3	76
3	En	4	10	2.2	80
	Mi	11	42	1.9	86
4	Mi	10	19	1.9	86
	En	13	3	2.2	80
	Te	16	15	2.3	76
	Di	18	47	2.8	75
5	Mi	8	56	1.9	86
	En	21	57	2.2	80
6	Mi	7	34	1.9	86
	Te	13	34	2.2	75
7	Rh	5	54	1.6	65
	Mi	6	11	1.9	86
	En	6	51	2.2	80
	Di	12	28	2.7	74
8	Mi	4	48	1.8	86
	Te	10	52	2.2	75
	En	15	44	2.1	80
9	Mi	3	25	1.8	86
10	En	0	37	2.1	80
	Mi	2	2	1.8	85
	Di	6	9	2.7	74
	Te	8	11	2.2	75
11	Mi	0	39	1.8	85
	En	9	30	2.1	80
	Rh	18	17	1.6	64
	Mi	23	17	1.8	85
12	Te	5	30	2.1	75
	En	18	23	2.1	80
	Mi	21	54	1.8	85
	Di	23	51	2.6	74
13	Mi	20	32	1.8	85
14	Te	2	48	2.1	75
	En	3	16	2.0	80
	Mi	19	9	1.8	85
15	En	12	9	2.0	80
	Di	17	32	2.5	74
	Mi	17	46	1.8	85
16	Te	0	7	2.1	75
	Rh	6	41	1.6	64
	Mi	16	23	1.7	85
	En	21	2	2.0	80
17	Mi	15	0	1.7	85
	Te	21	25	2.1	74
July 18	En	5h	55m	1.9″	80°
	Di	11	14	2.4	73
	Mi	13	37	1.7	85
19	Mi	12	14	1.7	85
	En	14	48	1.9	79
	Te	18	43	2.0	74
20	Mi	10	51	1.6	84
	Rh	19	5	1.5	63
	En	23	41	1.9	79
21	Di	4	55	2.3	73
	Mi	9	29	1.6	84
	Te	16	2	2.0	74
22	Mi	8	6	1.6	84
	En	8	34	1.9	79
23	Mi	6	43	1.6	84
	Te	13	20	1.9	73
	En	17	27	1.9	79
	Di	22	36	2.2	72
24	Mi	5	20	1.5	84
25	En	2	20	1.8	79
	Mi	3	57	1.5	84
	Rh	7	30	1.4	62
	Te	10	39	1.9	73
26	Mi	2	35	1.5	84
	En	11	13	1.8	78
	Di	16	17	2.1	72
27	Mi	1	12	1.4	83
	Te	7	58	1.8	73
	En	20	6	1.7	78
	Mi	23	49	1.4	83
28	Mi	22	27	1.4	83
29	En	5	0	1.7	78
	Te	5	17	1.8	73
	Di	9	59	2.0	71
	Rh	19	54	1.3	60
	Mi	21	4	1.4	83
30	En	13	53	1.6	78
	Mi	19	41	1.3	83
31	Te	2	35	1.7	72
	Mi	18	18	1.3	83
	En	22	46	1.6	78
Aug. 1	Di	3	40	1.9	71
	Mi	16	55	1.3	83
	Te	23	54	1.6	72
2	En	7	39	1.5	78
	Mi	15	32	1.3	83
3	Rh	8	18	1.2	58
	Mi	14	9	1.2	82
	En	16	32	1.5	78
	Te	21	12	1.5	71
	Di	21	22	1.8	70
4	Mi	12	46	1.2	82
5	En	1	26	1.4	77
	Mi	11	24	1.2	82
	Te	18	31	1.5	71
6	Mi	10	1	1.1	82
	En	10	20	1.4	77
	Di	15	3	1.7	69
7	Mi	8	39	1.1	82
	Te	15	49	1.4	70
	En	19	13	1.3	77
	Rh	20	43	1.1	56
8	Mi	7	16	1.1	81
9	En	4	6	1.3	77
	Mi	5	54	1.0	81
	Di	8	45	1.6	68
	Te	13	8	1.3	70

1906		Gr.M.T.	s. p. (West)	1906		Gr.M.T.	s. p. (West)	1906		Gr.M.T.	s. p. (West)
Aug. 10	Mi	4h 31m	1.0″ 81°	Aug 18	Te	23h 41m	1.0″ 68°	Aug. 28	En	8h 31m	0.5″ 73°
	En	13 0	1.2 76	19	Mi	14 43	0.7 79		Te	10 14	0.5 65
11	Mi	3 8	1.0 81	20	En	3 12	0.8 75		Di	12 36	0.6 60
	Te	10 26	1.2 70		Di	7 31	1.0 64	29	Mi	0 56	0.4 78
	En	21 53	1.2 76		Mi	13 21	0.7 79		En	17 24	0.4 73
12	Mi	1 45	1.0 81		Te	20 59	0.9 67		Mi	23 33	0.4 78
	Di	2 26	1.5 67	21	Rh	9 58	0.7 49	30	Te	7 32	0.4 64
	Rh	9 8	1.0 54		Mi	11 58	0.7 79		Rh	10 50	0.5 43
13	Mi	0 22	0.9 81		En	12 5	0.8 75		Mi	22 10	0.3 77
	En	6 46	1.1 76	22	Mi	10 35	0.6 79	31	En	2 17	0.3 72
	Te	7 45	1.1 69		Te	18 18	0.8 67		Di	6 18	0.5 59
	Mi	22 59	0.9 80		En	20 58	0.7 74		Mi	20 48	0.3 77
14	En	15 39	1.1 76	23	Di	1 13	0.9 63	Sept. 1	Te	4 51	0.3 63
	Di	20 7	1.3 66		Mi	9 12	0.6 79		En	11 10	0.2 72
	Mi	21 36	0.9 80	24	En	5 51	0.7 74		Mi	19 25	0.2 77
15	Te	5 3	1.1 69		Mi	7 50	0.6 78	2	Mi	18 2	0.2 77
	Mi	20 13	0.9 80		Te	15 36	0.7 66		En	20 3	0.2 72
16	En	0 32	1.0 76	25	Mi	6 27	0.5 78		Di	23 59	0.3 58
	Mi	18 50	0.8 80		En	14 44	0.6 73	3	Te	2 10	0.2 62
	Rh	21 33	0.8 52		Di	18 54	0.8 62		Mi	16 39	0.1 76
17	Te	2 22	1.0 68		Rh	22 24	0.6 46		Rh	23 17	0.3 40
	En	9 26	0.9 76	26	Mi	5 4	0.5 78	4	En	4 57	0.1 71
	Di	13 49	1.2 65		Te	12 55	0.6 66		Mi	15 17	0.1 76
	Mi	17 27	0.8 80		En	23 37	0.6 73		Te	23 29	0.1 61
18	Mi	16 5	0.8 80	27	Mi	3 41	0.5 78				
	En	18 19	0.9 75	28	Mi	2 19	0.4 78				

REAPPEARANCE AFTER OPPOSITION.

s. p. denote the geocentric place of the satellite at the time of its reappearance, i. e., the distance from the limb of the planet and the position angle, counted from the north point of the minor axis to the East.

1906		Gr.M.T.	s. p. (East)	1906		Gr.M.T.	s. p. (East)	1906		Gr.M.T.	s. p. (East)
Sept. 4	Rh	1h 37m	0.1″ 37°	Sept 18	En	0h 22m	0.9″ 71°	Oct. 2	Mi	1h 33m	1.3″ 71°
	En	7 28	0.0 71		Te	7 14	1.3 61	3	Mi	0 11	1.3 71
	Mi	17 31	0.0 72		Mi	20 50	0.6 71		En	2 11	1.8 71
5	Te	2 1	0.0 59	19	En	9 16	1.0 71		Di	5 31	3.1 61
	Mi	16 8	0.0 72		Di	12 57	1.8 59		Te	9 46	2.4 62
	En	16 21	0.1 71		Mi	19 28	0.7 71		Mi	22 48	1.3 71
	Di	20 27	0.1 57	20	Te	7 33	1.4 61	4	En	11 4	1.9 71
6	Mi	14 45	0.0 72		Mi	18 5	0.7 71		Mi	21 25	1.4 71
	Te	23 20	0.2 59		En	18 10	1.1 71	5	Te	7 6	2.5 62
7	En	1 15	0.2 71	21	Mi	16 42	0.7 71		Rh	17 2	4.4 50
	Mi	13 23	0.1 72	22	Te	1 52	1.6 61		En	19 57	1.9 71
8	En	10 8	0.2 71		En	3 3	1.1 71		Mi	20 3	1.4 71
	Mi	12 0	0.1 72		Rh	3 34	2.6 46		Di	23 14	3.3 62
	Di	14 5	0.5 57		Di	6 41	2.1 60	6	Mi	18 40	1.4 71
	Rh	14 6	0.7 40		Mi	15 20	0.8 71	7	Te	4 25	2.6 62
	Te	20 39	0.4 59	23	En	11 57	1.2 71		En	4 52	2.0 71
9	Mi	10 37	0.2 72		Mi	13 57	0.8 71		Mi	17 17	1.4 71
	En	19 2	0.3 71		Te	23 11	1.7 61	8	En	13 46	2.0 71
10	Mi	9 15	0.2 72	24	Mi	12 34	0.9 71		Mi	15 55	1.5 71
	Te	17 58	0.5 60		En	20 51	1.2 71		Di	16 56	3.5 62
11	En	3 55	0.4 71	25	Di	0 24	2.4 60	9	Te	1 44	2.7 62
	Di	7 48	0.8 58		Mi	11 12	0.9 71		Mi	14 32	1.5 71
	Mi	7 52	0.3 72		Te	20 30	1.9 61		En	22 39	2.1 71
12	Mi	6 29	0.3 72	26	En	5 44	1.3 71	10	Rh	5 32	4.9 51
	En	12 49	0.5 71		Mi	9 49	1.0 71		Mi	13 9	1.6 71
	Te	15 17	0.7 60		Rh	16 3	3.2 48		Te	23 3	2.9 62
13	Rh	2 35	1.3 42	27	Mi	8 26	1.0 71	11	En	7 33	2.2 71
	Mi	5 7	0.4 72		En	14 38	1.4 71		Di	10 39	3.7 62
	En	21 43	0.6 71		Te	17 49	2.0 61		Mi	11 46	1.6 71
14	Di	1 31	1.2 58		Di	18 6	2.6 61	12	Mi	10 24	1.6 71
	Mi	3 44	0.4 72	28	Mi	7 4	1.1 71		En	16 26	2.2 71
	Te	12 36	0.9 60	29	Mi	5 41	1.1 71		Te	20 22	3.0 62
15	Mi	2 21	0.4 72		Te	15 8	2.1 61	13	Mi	9 1	1.7 71
	En	6 36	0.7 71		En	23 31	1.5 71	14	En	1 19	2.3 71
16	Mi	0 59	0.5 72	30	Mi	4 18	1.2 71		Di	4 21	3.9 62
	Te	9 55	1.1 60		En	8 25	1.6 71		Mi	7 38	1.7 71
	En	15 29	0.8 71		Di	11 48	2.9 61		Te	17 41	3.1 62
	Di	19 14	1.5 59	Oct. 1	Mi	2 56	1.2 71		Rh	18 1	5.4 52
	Mi	23 36	0.5 72		Rh	4 32	3.8 49	15	Mi	6 16	1.7 71
17	Rh	15 4	2.0 44		Te	12 27	2.3 62		En	10 12	2.4 71
	Mi	22 13	0.6 71		En	17 18	1.7 71	16	Mi	4 53	1.8 71

1906		Gr.M.T.		s. p. (East)	
Oct. 16	Te	15h	0m	3.2″	62°
	En	19	6	2.4	71
	Di	22	4	4.1	62
17	Mi	3	30	1.8	71
18	Mi	2	8	1.8	71
	En	3	59	2.5	71
	Te	12	19	3.3	62
19	Mi	0	45	1.9	71
	Rh	6	30	5.8	53
	En	12	52	2.6	71
	Di	15	46	4.2	62
	Mi	23	23	1.9	71
20	Te	9	38	3.4	63
	En	21	45	2.6	71
	Mi	22	0	1.9	71
21	Mi	20	37	1.9	71
22	En	6	39	2.7	71
	Te	6	58	3.5	63
	Di	9	28	4.4	63
	Mi	19	15	1.9	71
23	En	15	32	2.7	71
	Mi	17	52	2.0	71
	Rh	19	0	6.2	54
24	Te	4	17	3.6	63
	Mi	16	29	2.0	71
25	En	0	26	2.8	71
	Di	3	11	4.5	63
	Mi	15	7	2.0	71
26	Te	1	36	3.6	63
	En	9	19	2.8	71
	Mi	13	44	2.1	71
27	Mi	12	22	2.1	71
	En	18	13	2.8	71
	Di	20	53	4.7	63
	Te	22	55	3.7	63
28	Rh	7	29	6.6	55
	Mi	10	59	2.1	71
29	En	3	6	2.9	71
	Mi	9	36	2.2	71
	Te	20	14	3.8	63
30	Mi	8	13	2.2	71
	En	12	0	2.9	71
	Di	14	36	4.8	63
31	Mi	6	50	2.2	71
	Te	17	33	3.8	63
	En	20	53	2.9	71
Nov. 1	Mi	5	28	2.2	71
	Rh	19	58	6.9	55
2	Mi	4	5	2.2	71
	En	5	47	3.0	72
	Di	8	19	5.0	64
	Te	14	52	3.9	64
3	Mi	2	43	2.3	71
	En	14	41	3.0	72
4	Mi	1	20	2.3	71
	Te	12	12	3.9	64
	En	23	34	3.0	72
	Mi	23	57	2.3	71
5	Di	2	2	5.1	64
	Mi	22	35	2.3	72
6	En	8	27	3.0	72
	Rh	8	28	7.1	56
	Te	9	32	3.9	64
	Mi	21	12	2.3	72
7	En	17	21	3.0	72
	Di	19	45	5.2	64
	Mi	19	50	2.3	72
8	Te	6	51	4.0	64
	Mi	18	27	2.3	72
9	En	2	15	3.0	72
	Mi	17	4	2.4	72
10	Te	4	10	4.0	64
	En	11	8	3.1	72
	Di	13	28	5.3	64
	Mi	15	42	2.4	72
	Rh	20	57	7.3	56

1906		Gr. M.T.		s. p. (East)	
Nov. 11	Mi	14h	19m	2.4″	72°
	En	20	1	3.1	72
12	Te	1	29	4.0	64
	Mi	12	56	2.4	72
13	En	4	55	3.1	72
	Di	7	10	5.4	64
	Mi	11	34	2.4	72
	Te	22	48	4.1	64
14	Mi	10	11	2.4	72
	En	13	49	3.1	72
15	Mi	8	48	2.4	72
	Rh	9	26	7.5	57
	Te	20	7	4.1	64
	En	22	42	3.1	72
16	Di	0	53	5.4	64
	Mi	7	26	2.5	72
17	Mi	6	3	2.5	72
	En	7	36	3.1	72
	Te	17	26	4.1	64
18	Mi	4	41	2.5	72
	En	16	30	3.2	72
	Di	18	35	5.5	64
19	Mi	3	18	2.5	72
	Te	14	45	4.1	64
	Rh	21	56	7.6	57
20	En	1	23	3.2	72
	Mi	1	55	2.5	72
21	Mi	0	33	2.5	72
	En	10	17	3.2	72
	Te	12	5	4.2	64
	Di	12	18	5.4	65
	Mi	23	10	2.5	72
22	En	19	11	3.2	72
	Mi	21	47	2.5	72
23	Te	9	25	4.2	65
	Mi	20	25	2.5	72
24	En	4	4	3.2	72
	Di	6	0	5.4	65
	Rh	10	25	7.6	58
	Mi	19	2	2.5	72
25	Te	6	44	4.2	65
	En	12	57	3.2	72
	Mi	17	39	2.5	72
26	Mi	16	17	2.5	72
	En	21	51	3.2	72
	Di	23	43	5.4	65
27	Te	4	3	4.2	65
	Mi	14	54	2.5	72
28	En	6	44	3.2	73
	Mi	13	31	2.5	72
	Rh	22	54	7.6	58
29	Te	1	23	4.2	65
	Mi	12	9	2.5	73
	En	15	38	3.2	73
	Di	17	26	5.4	65
30	Mi	10	46	2.5	73
	Te	22	42	4.1	65
Dec. 1	En	0	32	3.2	73
	Mi	9	23	2.5	73
2	Mi	8	0	2.5	73
	En	9	25	3.2	73
	Di	11	9	5.4	65
	Te	20	1	4.1	65
3	Mi	6	38	2.5	73
	Rh	11	23	7.5	59
	En	18	19	3.2	73
4	Mi	5	15	2.5	73
	Te	17	20	4.1	65
5	En	3	13	3.2	73
	Mi	3	52	2.5	73
	Di	4	51	5.3	66
6	Mi	2	30	2.5	73
	En	12	6	3.2	73
	Te	14	39	4.1	66
7	Mi	1	7	2.4	73
	En	21	0	3.2	73

1906		Gr.M.T.		s. p. (East	
Dec. 7	Di	22h	34m	5.3″	66°
	Mi	23	44	2.4	73
	Rh	23	52	7.4	59
8	Te	11	58	4.1	66
	Mi	22	22	2.4	73
9	En	5	54	3.2	73
	Mi	20	59	2.4	73
10	Te	9	18	4.0	66
	En	14	47	3.2	73
	Di	16	17	5.3	66
	Mi	19	37	2.4	73
11	Mi	18	14	2.4	74
	En	23	41	3.2	74
12	Te	6	37	4.0	66
	Rh	12	21	7.3	60
	Mi	16	51	2.4	74
13	En	8	34	3.2	74
	Di	9	59	5.2	66
	Mi	15	29	2.4	74
14	Te	3	56	3.9	66
	Mi	14	6	2.4	74
	En	17	28	3.1	74
15	Mi	12	43	2.3	74
16	Te	1	16	3.9	66
	En	2	22	3.1	74
	Di	3	42	5.1	66
	Mi	11	21	2.3	74
17	Rh	0	50	7.2	60
	Mi	9	58	2.3	74
	En	11	15	3.1	74
	Te	22	35	3.8	66
18	Mi	8	36	2.3	74
	En	20	9	3.0	74
	Di	21	25	5.0	67
19	Mi	7	13	2.3	74
	Te	19	54	3.8	66
20	En	5	2	3.0	74
	Mi	5	50	2.3	74
21	Mi	4	28	2.3	74
	Rh	13	19	7.0	61
	En	13	56	3.0	74
	Di	15	8	4.9	67
	Te	17	13	3.7	67
22	Mi	3	5	2.3	74
	En	22	49	2.9	74
23	Mi	1	43	2.2	75
	Te	14	32	3.7	67
24	Mi	0	20	2.2	75
	En	7	43	2.9	74
	Di	8	50	4.8	67
	Mi	22	57	2.2	75
25	Te	11	52	3.6	67
	En	16	37	2.8	74
	Mi	21	35	2.2	75
26	Rh	1	48	6.8	62
	Mi	20	12	2.1	75
27	En	1	30	2.8	74
	Di	2	33	4.7	67
	Te	9	11	3.6	67
	Mi	18	49	2.1	75
28	En	10	24	2.7	75
	Mi	17	27	2.1	75
29	Te	6	30	3.5	67
	Mi	16	4	2.0	76
	En	19	18	2.7	75
	Di	20	16	4.6	68
30	Rh	14	18	6.6	63
	Mi	14	42	2.0	76
31	Te	3	50	3.4	68
	En	4	11	2.6	75
1907	Mi	13	19	2.0	76
Jan. 1	En	13	5	2.6	75
	Di	13	58	4.5	68
2	Te	1	9	3.3	68
4	Rh	2	46	6.3	64

SHADOWS OF THE SATELLITES *TETHYS, DIONE, RHEA.*

Crossing the minor axis of the disc at the distance y from the center.

1906		Gr.M.T.	y (South)
June 25	Di	6.2h	5.3″
	Rh	23.5	7.7
26	Te	5.7	4.6
27	Di	23.9	5.3
28	Te	3.0	4.6
30	Te	0.3	4.6
	Rh	11.9	7.7
	Di	17.6	5.3
July 1	Te	21.6	4.6
3	Di	11.3	5.3
	Te	18.9	4.6
5	Rh	0.4	7.7
	Te	16.2	4.6
6	Di	5.0	5.3
7	Te	13.5	4.6
8	Di	22.7	5.3
9	Te	10.8	4.6
	Rh	12.8	7.6
11	Te	8.1	4.6
	Di	16.4	5.3
13	Te	5.5	4.6
14	Rh	1.2	7.6
	Di	10.1	5.3
15	Te	2.8	4.6
17	Te	0.1	4.6
	Di	3.8	5.3
18	Rh	13.7	7.6
	Te	21.4	4.7
19	Di	21.5	5.3
20	Te	18.7	4.7
22	Di	15.2	5.3
	Te	16.0	4.7
23	Rh	2.1	7.5
24	Te	13.3	4.7
25	Di	8.9	5.3
26	Te	10.6	4.7
27	Rh	14.6	7.5
28	Di	2.6	5.3
	Te	7.9	4.7
30	Te	5.3	4.7
	Di	20.2	5.3
Aug. 1	Te	2.5	4.7
	Rh	3.1	7.4
2	Di	13.9	5.2
	Te	23.9	4.7
4	Te	21.2	4.7
5	Di	7.6	5.2
	Rh	15.5	7.4
6	Te	18.5	4.7
8	Di	1.3	5.2
	Te	15.8	4.7
10	Rh	3.9	7.3
	Te	13.1	4.7
	Di	19.0	5.2
12	Te	10.4	4.7
13	Di	12.7	5.2
14	Te	7.7	4.7
	Rh	16.4	7.2
16	Te	5.0	4.7
	Di	6.4	5.2
18	Te	2.3	4.7
19	Di	0.0	5.1
	Rh	4.8	7.2
	Te	23.6	4.7
21	Di	17.8	5.1
	Te	20.9	4.7
23	Rh	17.3	7.1
	Te	18.2	4.7
24	Di	11.4	5.1
25	Te	15.5	4.7
27	Di	5.1	5.1
Aug. 27	Te	12.9h	4.7″
28	Rh	5.7	7.1
29	Te	10.2	4.7
	Di	22.8	5.1
31	Te	7.5	4.7
Sept. 1	Di	16.5	5.0
	Rh	18.2	7.0
2	Te	4.8	4.6
4	Te	2.1	4.6
	Di	10.2	5.0
5	Te	23.4	4.6
6	Rh	6.6	7.0
7	Di	3.9	5.0
	Te	20.7	4.6
9	Te	18.0	4.6
	Di	21.6	5.0
10	Rh	19.1	6.8
11	Te	15.4	4.6
12	Di	15.3	4.9
13	Te	12.7	4.6
15	Rh	7.6	6.7
	Di	9.0	4.9
	Te	10.0	4.6
17	Te	7.3	4.6
18	Di	2.7	4.9
19	Te	4.6	4.6
	Rh	20.0	6.7
20	Di	20.4	4.8
21	Te	1.9	4.5
22	Te	23.2	4.5
23	Di	14.1	4.8
24	Rh	8.5	6.6
	Te	20.5	4.5
26	Di	7.8	4.8
	Te	17.8	4.5
28	Te	15.1	4.5
	Rh	20.9	6.5
29	Di	1.5	4.8
30	Te	12.5	4.5
Oct. 1	Di	19.1	4.7
2	Te	9.8	4.5
3	Rh	9.4	6.4
4	Te	7.1	4.4
	Di	12.9	4.7
6	Te	4.4	4.4
7	Di	6.5	4.6
	Rh	21.8	6.3
8	Te	1.7	4.4
9	Te	23.0	4.4
10	Di	0.1	4.6
11	Te	20.3	4.4
12	Rh	10.3	6.2
	Di	17.9	4.6
13	Te	17.7	4.4
15	Di	11.6	4.5
	Te	15.0	4.3
16	Rh	22.7	6.1
17	Te	12.3	4.3
18	Di	5.4	4.5
19	Te	9.6	4.3
20	Di	23.1	4.5
21	Te	6.9	4.3
	Rh	11.2	6.0
23	Te	4.2	4.3
	Di	16.8	4.4
25	Te	1.5	4.2
	Rh	23.6	5.9
26	Di	10.5	4.4
	Te	22.9	4.2
28	Te	20.2	4.2
29	Di	4.2	4.3
Oct. 30	Rh	12.1h	5.8″
	Te	17.5	4.2
31	Di	21.9	4.3
Nov. 1	Te	14.8	4.1
3	Te	12.1	4.1
	Di	15.6	4.2
4	Rh	0.6	5.7
5	Te	9.5	4.1
6	Di	9.3	4.2
7	Te	6.8	4.1
8	Rh	13.0	5.6
9	Di	3.0	4.1
	Te	4.1	4.0
11	Te	1.4	4.0
	Di	20.7	4.1
12	Te	22.7	4.0
13	Rh	1.5	5.5
14	Di	14.4	3.9
	Te	20.0	4.0
16	Te	17.3	3.9
17	Di	8.1	3.9
	Rh	14.0	5.4
18	Te	14.7	3.9
20	Di	1.8	3.8
	Te	12.0	3.9
22	Rh	2.4	5.2
	Te	9.3	3.9
	Di	19.5	3.8
24	Te	6.6	3.8
25	Di	13.2	3.7
26	Te	3.9	3.8
	Rh	14.9	5.1
28	Te	1.3	3.8
	Di	6.9	3.7
29	Te	22.6	3.7
Dec. 1	Di	0.6	3.6
	Rh	3.4	5.0
	Te	19.9	3.7
3	Te	17.2	3.6
	Di	18.3	3.6
5	Te	14.5	3.6
	Rh	15.8	4.8
6	Di	12.0	3.5
7	Te	11.8	3.6
9	Di	5.7	3.5
	Te	9.2	3.5
10	Rh	4.3	4.7
11	Te	6.5	3.5
	Di	23.4	3.4
13	Te	3.8	3.5
14	Rh	16.8	4.6
	Di	17.2	3.4
15	Te	1.1	3.5
16	Te	22.5	3.4
17	Di	10.8	3.3
18	Te	19.8	3.4
19	Rh	5.3	4.5
20	Di	4.5	3.3
	Te	17.1	3.4
22	Te	14.4	3.3
	Di	22.3	3.2
23	Rh	17.7	4.4
24	Te	11.7	3.3
25	Di	16.0	3.2
26	Te	9.0	3.3
28	Rh	6.2	4.3
	Te	6.3	3.2
	Di	9.7	3.1
30	Te	3.7	3.2
31	Di	3.4	3.1